Claims

1. A process for producing a fibre material having reduced susceptibility to yellowing, comprising activating the fibres of the matrix with an oxidizing agent capable of oxidizing phenolic or similar structural groups, which may undergo reactions conducive to the formation of coloured sites on the fibres, and attaching to the oxidized sites at least one modifying agent to block the reactivity of the oxidized sites.

2. The process according to claim 1, wherein activation is carried out enzymatically or chemically.

3. The process according to claim 1 or 2, comprising the steps of

- reacting the lignocellulosic fibrous matrix with an oxidizing agent in the presence of a catalyst capable of catalyzing the oxidation of phenolic or similar structural groups by said oxidizing agent to provide an oxidized fibre material, and
- contacting the oxidized fibre material with a modifying agent containing at least one first functional portion, which is compatible with the oxidized fibre material, said modifying agent being capable of providing the lignocellulosic fibre material with properties reducing susceptibility to yellowing.

4. The process according to claim 3, wherein the modifying agent is activated with an oxidizing agent.

5. The process according to any of claims 1 to 4, wherein the modifying agent is a brightness reversion inhibitor.

6. The process according to any of claims 1 to 5, wherein the modifying agent is selected from the group comprising C_{1-4} alkanols, unsaturated carboxylic acids, monocarboxylic unsaturated fatty acids, and monocarboxylic unsaturated fatty acids containing a minimum of two double bonds, preferably two conjugated double bonds.

7. The process according to claim 6, wherein the modifying agent is linoleic acid or linolenic acid.

8. The process according to any of claims 1 to 5, wherein the modifying agent is selected from the group of antioxidants.

9. The process according to any of the claims 3 to 8, wherein the catalyst capable of catalyzing the oxidation of phenolic or similar structural groups is an enzyme or an chemical agent.

10. The process according to claim 9, wherein the enzyme capable of catalyzing the oxidation of phenolic or similar structural groups is selected from the group of peroxidases and oxidases.

11. The process according to claim 10, wherein the enzyme is selected the group of laccases (EC 1.10.3.2), catechol oxidases (EC 1.10.3.1), tyrosinases (EC 1.14.18.1), bilirubin oxidases (EC 1.3.3.5), horseradish peroxidase (EC 1.11.1.7), manganase peroxidase (EC 1.11.1.13) and lignin peroxidase (EC 1.11.1.14).

12. The process according to any of claims 3 to 11, wherein the enzyme dosage is about 1 to 100,000 nkat/g, preferably 10-500 nkat/g, and it is employed in an amount of 0.0001 to 10 mg protein/g of dry matter.

13. The process according to claim 9, wherein the chemical agent is selected from the group of per-compounds, in particular from the group consisting of alkali metal persulphates and hydrogen peroxide.

14. The process according to any of the preceding claims, wherein the oxidizing agent is selected from the group of oxygen, hydrogen peroxide and oxygen-containing gases, such as air.

15. The process according to any of the preceding claims, wherein oxygen or oxygen-containing gas is introduced into the aqueous slurry during the reaction.

16. The process according to any of the preceding claims, wherein the reaction of step (a) is carried out in an aqueous or dry phase at a consistency of 1 to 95 % by weight, preferably about 2 to 40 % by weight, of the fibre material.

17. The process according to any of the preceding claims, wherein the reaction is carried out at temperature in the range of from 5 to100 °C

18. Method of reducing light or heat induced brightness reversion of mechanical or high-yield chemical pulp, comprising the steps of

- enzymatically or chemically oxidizing phenolic groups of the pulp and
- bonding to the oxidized phenolic groups a substance capable of forming a colourless lignin derivative unable to participate in yellowing reactions.

19. The process according to any of the preceding claims, wherein the reaction steps are carried out sequentially or simultaneously.